MEDICAL SOCIETY

OF

THE STATE OF PENNSYLVANIA

SESSION OF 1878.

# THE ADDRESS IN HYGIENE.

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# REPORT

OF THE

# PHILADELPHIA COUNTY MEDICAL SOCIETY ON METEOROLOGY AND EPIDEMICS.

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BY

BENJAMIN LEE, A.M., M.D., PH.D. UNIV. PENN.

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EXTRACTED FROM THE TRANSACTIONS.

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# THE ADDRESS IN HYGIENE.

By a fortunate accident, the Address which I had the honor to deliver before the Society at its meeting of the present year, under the title of "Pittsburgh's Lesson," has been lost. I say a *fortunate* accident, because in the mean time Dr. Snively, the Registrar of Vital Statistics of that city, has been able to investigate more thoroughly the history and circumstances of the violent epidemic of Diphtheria which prevailed there during the eight months ending March 31, 1878, and to trace with greater precision than I was then able to do, even with his kind assistance, the direct relationship of causation which certain palpable insanitary conditions then existing bore to the outbreak.

A better text from which to preach a sanitary sermon no hygienist could have desired. Following the hint of Shakspeare's sagacious observer who found "tongues in trees, sermons in stones, books in the running brooks, and good in everything," it was an easy matter to read a homily from the four hundred little white headstones which marked four hundred new-made graves on the beautiful hillside above the bank of the rushing river, just outside the city; it required little imagination to hear the leaves whispering together in the night wind a sad requiem over those four hundred little mounds, green with the grass of their first summer; and no imagination whatever to perceive that beneath our feet, as we walked the streets of that busy town, were running, through tortuous subterranean courses, noxious streams, whose pestilential gases would prove, as they had proved, death-angels to many a household. The "good" which we were to look for here was to be found, in a fresh opportunity to educate the public mind and quicken the official conscience in regard to the sin of filthiness.

I felt that no apology was needed to the Society whose guests we were for thus calling attention to the shortcomings of their civic authorities, as I knew that its members had themselves made every

effort to give publicity to the unhappy facts, and were anxious that they should be utilized in the interest of science and humanity. I offered no apology on the other hand to this Society for making the freest possible use of the material generously afforded me by Dr. Snively; for I felt sure that the information which he had collected, arranged in the light of his knowledge of time, circumstance, and place would be a more powerful argument in favor of scientific sanitary engineering than any that I could frame. The mind that can carefully peruse his plain recital, and consider it in connection with the excellent map which he has been good enough to furnish me to illustrate it, and fail to be convinced that sewer-gas will cause Diphtheria, could not comprehend the simplest proposition in mathematics.

The circumstances which give this epidemic its especial importance as an educator and an illustration are its intensity, the rapidity of its rise, its restricted localization, and the proved existence of insanitary conditions together with unusual meteorological exciting causes.

Sanitarians are often perplexed in their efforts to follow up a chain of evidence, by finding this or that link missing, which, although not needed to satisfy themselves, is essential to convince an unbeliever. In this case none are wanting.

Its intensity may be appreciated when I say that the city of Philadelphia, with a population six times as large, has never had so many deaths from this disease within a corresponding space of time.

As to the rapidity of its rise, its mortality ran up from zero in June to ninety-two in August, and two hundred and sixty-seven in October.

For such a startling increase in the prevalence of a single disease some remarkable cause must have existed. The Board of Health set itself to work to discover this cause and if possible to counteract it. The thoroughness of their investigation might well be imitated in some larger centres of population, in which equally combustible elements are only awaiting the spark which shall kindle them into a wide-spread conflagration. "Except ye reform ye shall all likewise perish."

As to the local conditions, distribution of the disease, and exciting causes, I now gladly allow Dr. Snively to speak.

"During the seven months, immediately preceding the outbreak, there were certified from widely-separated and remote parts of the city, only 35 deaths from diphtheria, distributed according to season as follows:—

"January, 9; February, 3; March, 4; April, 3; May, 5; June, 3;

and July, 8. These were distributed topographically as follows: East-end Wards, 8; Old City Wards, 12; South Side Wards, 15. Of the 15 deaths which occurred upon the South Side, but four were located in what we may appropriately designate (in the light of subsequent events) as the *infected district*, viz., These portions of the Twenty-sixth, Twenty-seventh, Twenty-eighth, and Twenty-ninth Wards, located contiguous to, or drained by, the Washington Street and the Twentieth Street sewers. The record for the month of August shows 61 deaths, of which number 43 occurred in the infected district, while of the 465 deaths which occurred during the eight months, from August 1, 1877, to April 1, 1878, 174 were located within the limits of the infected district.

"The territory to which I have applied this title is ninety acres in extent and triangular in shape, being bounded by Carson Street, Twenty-first Street, and the base of the hill which rises abruptly to an average height of 450 feet above low-water mark in the river. Carson Street, which may be considered to represent the average level of the district, is 60 feet above low-water mark. Owing to the fact that the streets running parallel with the river, are, as a rule, exceedingly level, the sewers which traverse them are of very low grade.

"In this district, during the month of August, 1877, diphtheria suddenly began to prevail in a manner to attract attention, and in a very short time threatened to assume the proportions of an epidemic. As previously stated, the deaths in this district during the first month of the outbreak numbered 43. Estimating one death to every five cases there must have occurred to produce such a result over 200 cases.

"The evidence is strongly presumptive, that in the sewers, particularly the one traversing Washington Street, in which a solid mass of filth from one to three feet in depth had accumulated, the specific poison, or whatever you choose to call it, which produces the disease known as diphtheria, had found a lodgment and a favorable soil for its development and multiplication. To the local sewers, undoubtedly, was due the fact that the disease selected this district as its habitat, and from this locality as a centre, radiated, presumably by virtue of its contagious properties, in every direction.

"The first cases occurred in immediate proximity to the Washington Street sewer. This sewer including its branches is a little over a mile and a half in length. That portion of it running from Tenth to Seventeenth Street was built in 1851. In 1866 it was extended to the river. Beginning at the foot of Eighth Street, its

main stem traverses that street to its intersection with Carson, from this point it passes diagonally through private property to the intersection of Ninth and Washington, and from this point traverses Washington to Seventeenth Street. It is constructed of brick, with five feet internal diameter from its mouth to Twelfth Street, four feet in diameter from Twelfth to Fourteenth Street, and two feet ten inches in diameter from Fourteenth to its terminus at Seventeenth Street. The average grade of the main line of this sewer is said to be one foot per hundred. Judged by the grade of Washington Street from Ninth to Seventeenth, it must be considerably less in this part of its course. It has twenty-nine street drops, *none of which are trapped*, the emanations therefrom being a source of great complaint. The refuse from a slaughter-house drains into the drop at the corner of Washington and Eleventh Streets. At the time of the outbreak of diphtheria this sewer had not been cleaned since its construction in 1851—a period of twenty-six years, and, as previously stated, was 'choked' throughout the greater part of its course with a mass of filth from one to three feet in depth."

The Board of Health, upon the discovery by its inspectors of this frightful state of affairs, took prompt action. At a meeting held August 29th, Dr. Thomas offered the following preambles and resolution:—

"WHEREAS, The Washington Street sewer is being used for the purpose of draining all the cesspools between that street and the hill as well as those located on line of said street; and,

WHEREAS, Material has accumulated until it is from fourteen inches to three feet deep, forming a semi-solid mass, which cannot be removed by water; and,

WHEREAS, The gases arising from this sewer are being forced out through the drops at every crossing—said drops opening into the sewer directly without intervening traps—thereby so contaminating the atmosphere of that portion of our city that it is absolutely unfit to be respired by human beings: Therefore,

*Resolved*, That this Board request City Councils to instruct the Street Commissioners of the district to have said sewer cleansed at the earliest possible date, and that one of the modern appliances for the prevention of the escape of the gases, be attached to each and every drop."

The resolution was adopted.

To one acquainted with the mental capacity of the average Solon of the Council Chamber, and his appreciation of the duties and responsibilities of his position it will not appear surprising that,

notwithstanding this urgent representation from an official source, nothing was done, and it was said that nothing could be done, toward remedying the condition of this sewer during warm weather. It was not until late in December that the work was undertaken, being concluded in January of this year.

So much for the Washington Street sewer and its high capabilities as a contagion breeder. Let us now follow Dr. Snively in his examination of the other "running brook."

"Following closely upon the development of the disease along the Washington Street sewer and its branches, a similar development occurred among the more elevated branches of the Twentieth Street sewer; so that the outbreak may be said to have been simultaneous throughout the infected district.

"The Twentieth Street sewer, including its branches, is about two and a half miles in length, and was built in 1867. Its main stem is constructed of brick with six feet internal diameter. Its main branches are also constructed of brick having diameter of five, four, and three feet. A pipe sewer four feet in diameter—being a continuation of the Eighteenth Street branch—extends a distance of 275 feet up the steep hill-side to Pius Street. This sewer would appear to have acted as a chimney or ventilator for those on the flat ground below, as the deaths were most numerous in the immediate vicinity of its terminus."

Thus the poor wretches who supposed that by taking up their abodes upon high ground they were going to insure themselves a healthy location, in consequence of their own ignorance of the simplest laws of physics, and the worse than ignorance of their constituted authorities, were only choosing a spot where the deadly infection might most surely reach them. "The remaining branches are constructed of 15-inch pipe. This sewer has a good grade with the exception of those branches which traverse the streets running parallel with the river. The street drops connected with it are provided with traps, with the exception of seven on Twenty-first Street, which are a source of much complaint because of offensive emanations. About a dozen slaughter-houses are located near its terminus on Twenty-first Street, the refuse from which is conveyed by it to the river."

As showing how carelessness and ignorance may convert that which should be an aid to sanitation into a positive instrument of atmospheric poisoning, it is alleged that the drops were also constantly becoming offensive, owing to the fact that people ignorantly threw stale eggs, vegetables, and all sorts of material into the drop, the most convenient place of deposit, under the delusion that they

would, in some way or other, get into the sewer and be carried away. It will be readily seen that, from this cause, the drop and not the sewer may often be the true source of offensive emanations.

"Both the Washington and Twentieth Street sewers are without systematic provision for ventilation. Man-holes are provided at intervals, but are covered with tight-fitting cast-iron lids."

The existence of fearfully insanitary conditions in the city of Pittsburgh previous to the outbreak of diphtheria is thus clearly shown. But these conditions were evidently no new thing. They had existed for years back, only growing each year in intensity, and lethal power. To what are we to attribute their sudden passage from the passive to the active condition? What was the spark which exploded the mine? The explanation of Dr. Snively given below is undoubtedly the correct one. It has a special significance for those of us who live in Philadelphia. There are large sections of that city in which, during summer storms of the slightest severity, the sewers not only refuse to perform their ordinary duty of carrying off the rain-fall, but vomit forth their stinking contents until the streets are for squares flooded knee deep. What must the effect of this pressure be upon the traps of houses on a higher level. I venture to say that there are few houses in the city in which, with a strong southeast wind and a high tide, one or more traps are not forced in the manner indicated.

"In cities which drain into tide-water," says Mr. Edward S. Philbrick, in the *Plumber*, "the outfalls of the sewers are generally covered at high-water, either every day or at spring tides. If the ends have no gates, the tide enters and fills the sewer as far back as its level allows. If gates exist they shut with the flow of the tide, and sewage accumulates behind them with a result often almost exactly similar to what would occur without gates. In either case a large volume of air is driven up from the outfall toward the ramification of the system by every flood tide which covers the mouth of the sewer, only to be drawn back again when the ebb tide allows the sewer to empty itself. If this air does not communicate freely with the outer air, a pressure of several feet of water must necessarily result, alternating with vacuum to the same amount every twelve hours.

"Large variations of pressure inside the sewers may also arise from the variable quantity of sewage flowing in them. Nearly all the sewage is discharged from the houses during the hours of daylight, the flow during the night being very small in comparison. Hence a periodic increase and decrease of the amount of air space within the sewers, dependent upon and varying inversely with the

amount of sewage flowing. This is particularly noticeable among manufacturing establishments, where much water is used during working hours, and which do not run during the night. Of course, the air must leave the space to make room for the sewage in the morning, and, as the flow of sewage diminishes in the evening, the outer air crowds in to fill the vacuum by whatever openings or ducts are most available."

Dr. Snively remarks—

"Sewers will always be dangerous enemies in our midst, until the sanitary engineers show us how to ventilate them. Until this be successfully accomplished, the residents possessing sewer connections, will be compelled, in order to protect their health and lives, to resort to traps. These, in whatever manner constructed, may, under certain circumstances, be unreliable. During a heavy rain-fall, the sewers are filled with water. The gas must therefore be displaced, and as the man-hole covers are tight, and the street-drops, already trapped, are rendered still more secure at this time, by the flood of water pouring through them, it must of necessity blow out the weaker traps in the house connections and enter the dwellings.

"It is exceedingly probable, that to a series of events of this character, was due the outbreak of diphtheria among the south-side sewers, during the month of August, 1877.

"The records of the signal office for the year 1877 show that prior to July 2, there occurred no heavy rain-fall, or sudden and violent rain storm, of short duration but sufficient to fill the sewers. During the night of July 2, rain fell to the amount of 1½ inches in seven and a half hours. This was equal to 20–100 inches per hour, and must have poured an immense volume of water into the sewers. During the afternoon of July 27, there occurred a rain-fall of 50–100 inches in a storm of one hour's duration—sufficient to test their utmost capacity." This would cause violent surface flooding of short duration. Its effect upon the sewers may be inferred from the fact that the velocity, force, and volume of water was sufficiently great to sweep a man, who was engaged in cleaning the Twentieth Street sewer, a distance of 880 feet into the river. "This disturbance of the sewers preceded by but a few days the outbreak of diphtheria. On August 12, rain fell to the amount of 40–100 inches in a storm of thirty-three minutes' duration. Again, on August 15, rain fell to the amount of 60–100 inches in sixty-five minutes. We find, therefore, that there occurred during the year 1877, *one* heavy rain-fall, and *three* sudden and violent rain storms of short duration, but amply sufficient upon each occasion, to cause an immense

volume of water to be discharged from the hill-side into the sewers; the effect of which, as previously described, would be to force the sewer-gas through the connections and into the dwellings. The date of occurrence of these four disturbing events, *coincides* to say the least, in a very suspicious manner, with the outbreak of diphtheria in this locality."

It is claimed by many sanitarians that the plan adopted in Pittsburgh, and in most of our cities of making the sewer also the carrier of storm water is a mistaken one. One ground for this opinion is that just expressed so clearly and forcibly in the last quotation. The other, or one other, is that the sewer must be made very much larger than its legitimate object demands, and hence be comparatively empty except during storms, thus affording an opportunity for the deposit of solid material in its course from want of force of flow to flush it. The above history seems to be strongly confirmatory of this view.

Such being the facts with regard to the danger of imperfectly protected sewer connections, is it not almost inconceivable that individuals can be found sufficiently reckless to omit all precautions whatever in forming such connections? And yet we are told that the testimony of the Street Commissioners is, that but a small proportion of the property owners possessing sewer connections have been at the trouble or expense of providing them with proper traps and ventilators. Upon this subject, also, Dr. Thomas, in his report to the Board of Health, says: "The first, and a majority of the cases of diphtheria seen by me, were in close proximity to the Washington Street sewer and its connections. This sewer is so badly constructed as to be a propagator of disease. A great error committed by landlords along Washington Street and the side streets, is the connecting of cellars, water-closets, and cesspools with the sewers without the addition of traps or ventilators. So long as this condition of affairs exists, we must expect, and will have, 'germ' diseases."

Not without its mournful basis of truth was the old superstition which tenanted the caves of the earth with foul dragons ever on the watch to seize and wrap in their loathsome folds the unwary mortal who ventured within reach of their pestilential breath; even stealing, under the cover of night, into human habitations, and stupefying sleeping victims with their noxious exhalations, until they fell easy victims to their cruel rapacity. Under every home in every city lies such a cavern, filled with like noisome beasts. "Eternal vigilance is the price" of safety from their insidious approaches.

I would that I could burn the red dots upon this map, every one of which is a house of mourning, as with an indelible brand into the brain of every one who looks upon it, so that ever afterward, when the word diphtheria met his gaze or fell upon his ear, the course of these serpentine sewers thickly clustered with their fruitage of death, might start into relief before his mind's eye, and the thought of sewer-gas instantly be present with him.

The increased interest which has been manifested by the public in matters relating to sanitary science in the city of Philadelphia during the past season has been very encouraging. Under the auspices of that useful organization, the *Social Science Association*, two highly instructive lectures were delivered by the well-known writer on Sanitary Engineering, Col. Geo. E. Waring, of Newport, R. I., to large and deeply interested audiences: one on the subject of "Household Drainage," the other on "Sewerage in Large Cities." Also one before the same association by the author of the present address, on "Sanitary Legislation in the Light of History," being a plea for the establishment of a State Board of Health in this Commonwealth. Finally a valuable paper was read before the Engineers' Club of Philadelphia, by Mr. Rudolph Hering, on "Philadelphia's Drainage." The large amount of space which was allotted to these essays in the daily press was an indication, not simply of the value which its managers attributed to them, but of an actual and lively demand for such information on the part of its readers.

## APPENDIX.

During the past year, the following appliances, contrivances, or plans for preventing disease, have been brought to the notice of your Committee:—

"*Dr. Colburn's Porous Evaporators.*"—Two of these have been under observation during the entire winter. The quantity of water which they allowed to evaporate was surprising, and they certainly contributed much to maintain those qualities in the atmosphere which render it acceptable both to the lungs and the skin.

Among the advantages justly claimed for this mode of evaporation may be enumerated the following:—

First. The vapor is produced from *filtered* water; the evaporation is from the *vessel's surface*, and approximates more nearly to that of Nature than any other artificial method heretofore used.

Second. This apparatus does not give out a *steam* vapor. Steam in the living rooms of houses is injurious, because it opens the pores of the skin, and much increases the liability to take cold upon going into the open air. Metal pans and evaporators which get hot, must give a steam vapor if they give any.

Third. Water evaporated in the *cellar* from *pans* connected *with the furnace*, is *mostly absorbed by the furnace itself*, and by the brick-work which often surrounds it, or is *consumed* in its passage through the hot-air pipes.

By placing the evaporator *at the register*, the *entire* quantity of water is evaporated *into the room.*

"*The Naphtha Cleansing Works.*"—In these works, articles of furniture or wearing apparel, which have been exposed to infection, are plunged bodily, no matter what their size, into a huge tank of naphtha and allowed to remain in a state of complete saturation for several hours. There can be but little doubt that the germs of disease are in this way completely deprived of vitality. The process is somewhat expensive, but, as in many cases, the only other alternative would be destruction by fire, this objection is not an insuperable one. It may be observed in this connection that Dr. John Day, of Geelong, recommends the following mixture, applied with a brush or sponge or by saturation, as a general disinfectant for furniture, woodwork, etc.:—

Benzine, seven parts; rectified oil of turpentine, one part; oil of verbena, five drops to every ounce.

*Hance's Disinfecting Evaporator* consists of a frame supporting a roller over which runs a sheet of coarse muslin, or webbing, like an old-fashioned kitchen-door towel. The lower end of the frame rests in a reservoir, in which a disinfectant solution is placed. An occasional turn of the roller exposes a newly charged surface of the webbing to the atmosphere. Its best position is opposite an open window or register, through which an incoming current of air is passing. It is certainly a convenient and efficient mode of distributing a volatile disinfectant, and is worthy the attention of all who are in charge of public institutions.

Mr. Lawrence Myers, of Philadelphia, has suggested a substitute for the water-closet, based upon the fact that desiccation renders fecal matter innocuous. He proposes to have a hot-air chamber in the cellar of each house, the heat for which could be supplied from a single boiler for an entire block of houses. This chamber should be air-tight except through its flues. It should contain a receptacle, running on a tramway, into which the feces should drop directly through a conical pipe, which receptacle should be removed at stated intervals and a fresh one substituted. The flue for discharging the vapor should be carried well above the roofs of all dwellings in the neighborhood. There are certainly practical difficulties in the way of directing the air currents in this plan, but our present system is so thoroughly objectionable and unsatisfactory, that every proposal looking to its abolition is welcome, and deserves consideration.

# MAP

showing local distribution of mortality

FROM

# DIPHTHERIA,

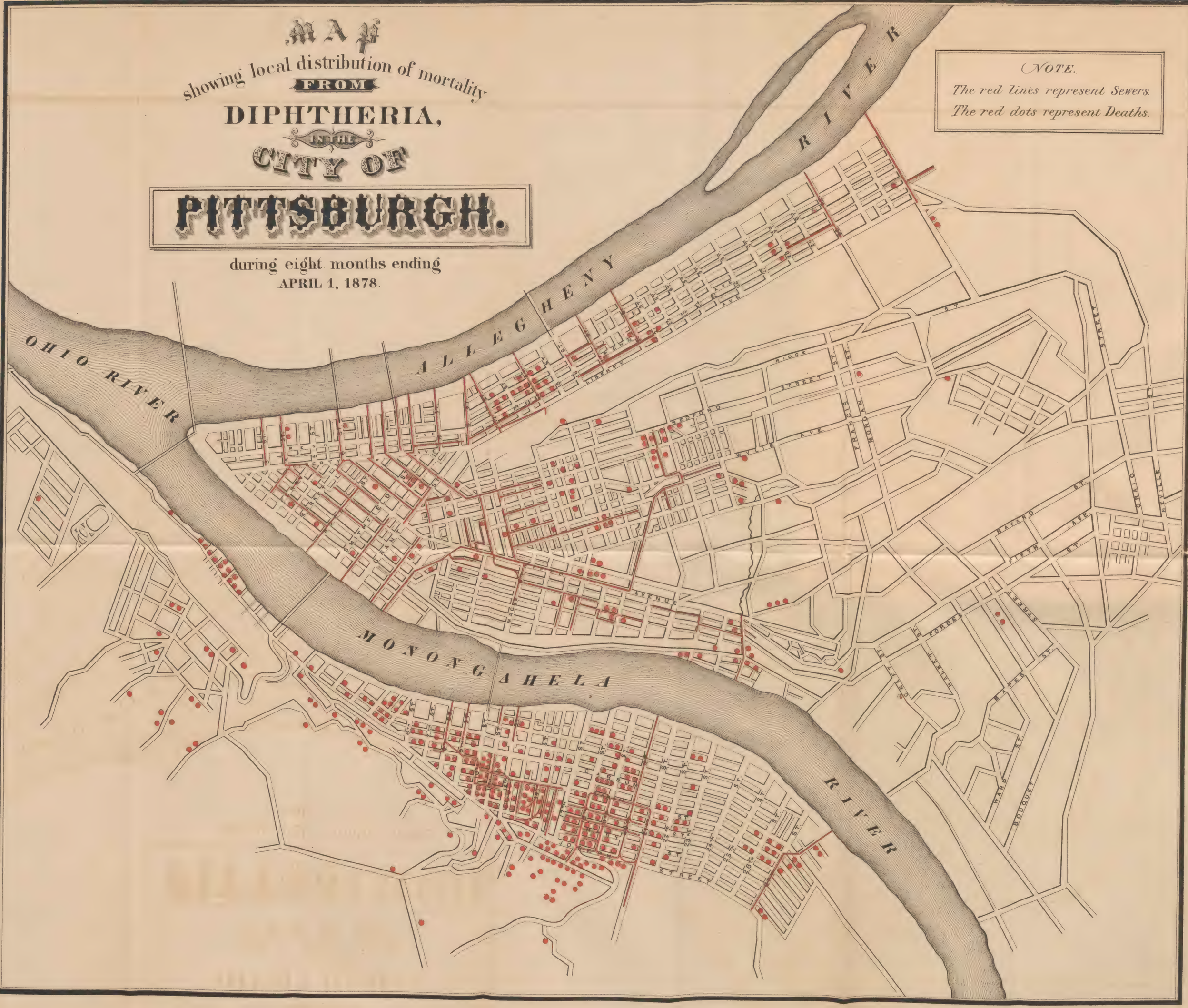
IN THE

# CITY OF

# PITTSBURGH.

during eight months ending
APRIL 1, 1878.

*NOTE.*
*The red lines represent Sewers.*
*The red dots represent Deaths.*



# REPORT OF THE PHILADELPHIA COUNTY MEDICAL SOCIETY ON METEOROLOGY AND EPIDEMICS, FOR THE YEAR 1877.

THE fact that the death-rate of Philadelphia during the past year was lower than for sixteen years previous, is one on which we may well congratulate ourselves. The actual number of deaths (see Mortuary Table) was 16,004, which, in a population of about 850,000, gives a death-rate of 18.81 per thousand, or one death to every 53.16 persons living. We shall find the key to this favorable showing in the METEOROLOGY of the year. Three points have been insisted on by your Committee, in previous reports, which appear to be substantiated by a comparison of the weather reports with the mortality during the period under consideration.

These are: First, that a rainy season lessens mortality; second, that a mild winter lessens mortality; and third, that sudden variations in temperature increase mortality, especially when they are in the falling direction. Thus in the report for 1873 occurs the following passage:—

"There is a popular impression, shared to some extent by the profession, that rainy weather is necessarily damp weather, and therefore unhealthy. That this is not the case is shown conclusively by our meteorological tables. While the rain-fall exceeded the average of the preceding twenty-one years by nearly ten inches, the relative humidity and force of vapor were actually below the average; and the month of June, during which only 1.64 inches of rain fell, showed a force of vapor of .482 of an inch; while May, in which 4.83 inches fell, showed a force of vapor of only .342 of an inch. The relative humidity of August, whose rain-fall was 11.36 inches, was only 2.5 per cent. greater than that of September, whose rain-fall was but 3.26 inches."

And further on in the same report—

"The generally satisfactory condition of the public health continued throughout the remainder of the year. The early part of November gave us a number of sharp frosts, which destroyed malarial germs, so that the mild and delightful month which followed, and which kept roses blooming in the open air until nearly Christ-

mas failed to produce the ill effects which were dreaded, or to confirm the truth of the old adage that a 'green yule makes a fat kirkyard.'"

As to the first point in connection with the year under review, we find on consulting the valuable meteorological tables kindly furnished the Committee by Prof. Kirkpatrick, that the *Rain-fall* of the year was 50 42 inches. This exceeds the means for the past twenty-six years by 3.54 inches, and that for 1876 by 7.47 inches. At the same time the *Relative Humidity* was 4.8 per cent. less than the average for twenty-six years. But while the rain-fall was great, the number of days on which rain fell was less than usual, and the number of days on which the sun shone was greater.

There are three good and sufficient reasons why a large rain-fall should improve the health of our city: First, because the rain in falling carries down with it mechanically particles of solid matter, whether germinant or dead, which are floating in the atmosphere, and absorbs noxious gases—in other words, washes the air; second, because, having fallen, it supplements the somewhat inadequate efforts of the contractors in cleansing the streets and flushing the sewers; and third and most important, because it fills the springs and water-courses, insuring a purer supply of drinking water. This it does in two ways: by increasing the amount of fluid in proportion to the contained organic matter, thus diluting the impurity; and in the case of springs, by raising the drainage level.

Regarding the second point, viz., the pernicious effect of a continuous low temperature, the facts during the past year are as follows: December, 1876, had been marked by intense and protracted cold, the mean for the month having been 28.70 , or 5.22 lower than the average for ten years previous. There were frequent sleet-storms, so that streets, roads, and fields were glazed with ice for several weeks, thus cutting off the supply of the springs and streams. The thermometer had ranged below the freezing point on twenty-one days. The high death-rate of January, which opens the year, is therefore only what was to be looked for, especially from *phthisis pulmonalis* and other affections of the lungs. January was moderately cold; February very mild; but in March there was a sudden and excessive fall early in the month, of forty degrees in eighteen hours, followed by continuous low temperature for twelve days, several falls of snow taking place. Before the end of the month this sudden reduction of temperature began to show itself in the mortality tables, and its effects were perceptible until the end of May, that month exhibiting a higher general mortality than any other except July, and the highest of all from consumption, namely, two

hundred and fifty-one. The autumn and early winter were exceptionally mild and delightful. The reports of the Signal Service Bureau for November and December read almost like a pastoral. Farmers are ploughing, fruit trees are budding, daisies and dandelions, honeysuckles and pansies are blooming, the cattle are pasturing in the meadows over which the yellow butterflies are flitting, and the frogs are singing in the marshes. The wise ones shake their heads ominously, and say, "very unhealthy winter this, *very* unhealthy." But the bills of mortality refuse to second their croaking—for notwithstanding the increase of population, the actual mortality for December is less than for several years. Its mean temperature was 15.24° higher than that of the December previous, and 10.02° higher than the mean for ten years.

The summer was marked by no such extreme of heat as that of 1876; but July showed a long continuance of decidedly high temperature, there having been thirteen days on which the mean range was above 81°. Cholera Infantum promptly made its appearance, adding seven hundred and fifty to the death list of July, and nine hundred and seventy-nine to that of the entire year. As observed in previous reports, the fluctuations in the rate of mortality from this disease coincide so exactly with those of the thermometer as to entitle it to be considered as essentially a heat-disease as sunstroke and thermal fever, and to indicate the paramount importance of making use of every means of refrigeration in our power, whether in clothing, food, drink, bathing, or ventilation, for keeping down the body-temperature of infants. Ice to the spine will check the purging of cholera infantum more certainly than any astringent. But it should be borne in mind that the drinking of large draughts of intensely cold water is neither an efficient nor a safe mode of refrigeration for either infants or adults. The contrast between the character of the heat of this month with that of the year previous is well shown in the fact that but eight deaths from sunstroke were reported in the former, and one hundred and twenty-seven in the latter.

To sum up, then, the characteristics of the year as regards atmospheric phenomena were equability of temperature with a high annual mean, resulting from its mild winter and autumn, a large rain-fall and a low relative humidity (61.3 per cent.; 66.1 per cent. being the average), and a preponderance of northwest wind with a clear sky. The effects of these conditions upon human health are seen in a diminished death-rate from all diseases which can be traced to atmospheric causes, producing a general diminution of 2888 as compared with the year before, and of 1801 as compared with

the year before that, and this in the face of a steady increase of population.

Under the head of Epidemics it is appropriate to consider to what extent diseases have prevailed which are liable to become epidemic, although they may not have been present to such an extent as to entitle them to be so classified. The only one of such affections left as a legacy by the previous year, which does not show a most gratifying falling off, is scarlet fever. The extreme prevalence of this disease, so dangerous in itself, and so treacherous in its sequelæ, bears ample witness to culpable neglect on the part of our profession in the enforcement of quarantine both during and after the attack. No child should be allowed familiar intercourse with persons who have not had the fever for a period of at least six weeks from the onset of the attack. The clothes which it has worn, and the room which it has occupied, with the furniture contained in it, should be most scrupulously disinfected, and such articles as cannot be disinfected should be burned. The lives sacrificed to this infection amounted to three hundred and seventy-nine, an increase of fifty-one over the victims of the previous year. The highest number, as will be seen by reference to table, occurred in July (46), and in December (66), thus showing that temperature and season have less to do with its prevalence than has been supposed.

Croup and Diphtheria combined are credited with seven hundred and ninety-six deaths, a diminution as compared with 1876 of two hundred and ninety-eight. Of this entire number but sixteen were adults.

Cerebro-Spinal Meningitis, now thoroughly endemic, carried off but fifty-six persons, a decrease of twenty-eight, or one-third. Of these forty-nine were children.

Smallpox, which was quite prevalent at the opening of the year, thirty-six deaths taking place in January, gradually fell off until the last death was recorded in the month of August, representing the mortality for that month, that for the year having been one hundred and fifty-five. If our municipal legislature could be prevailed upon to pass a law making vaccination compulsory, and our health authorities would faithfully execute it, we might now have seen the last epidemic of this disease in our city.

Measles caused sixty-nine deaths, none of persons of color. Whooping-cough, eighty-one.

Typhoid Fever. The five hundred and forty-two deaths accredited to this most unnecessary disease while, it is true, showing a decrease as compared with the previous year of two hundred and

nineteen, or 28.77 per cent., are still a sufficient monitor that this disease has entrenched itself very strongly in our community, and that the problem of its prophylaxis has yet to be solved as far as we are concerned. We have little reason to congratulate ourselves on this apparent improvement when we remember the circumstances of the year before—the host of strangers with which our city was crowded, many of them living under most insanitary conditions, the intense and protracted heat of the summer, and the (perhaps unavoidable) pollution of the Schuylkill water by the centennial drainage. Lest any may suppose that this last factor is merely a conjectural one, attention is asked to the following extract from the Report of the Committee on Hygiene, etc., for the past year, from the pen of the Secretary of the Committee, Dr. R. A. Cleemann:—

"*Inspection of the Systems of Drainage and Sewerage of the 'Centennial Grounds,' made while the area was being restored for the general purposes of the Park, and their relation to the Contamination of Drinking Water.*

"The portion of Fairmount Park chosen for the 'Centennial Grounds,' in extent 236 acres, may be described as a plateau extending eastward from George's Hill nearly to the river Schuylkill, having an elevation of about one hundred feet above the surface of the water, and being intersected by two principal ravines. These miniature valleys, called respectively 'Lansdowne' and 'Belmont,' each begin in the western part of the grounds as shallow and narrow depressions of the surface, but become broader and deeper as they extend eastward clearing the plateau to the river shore; along their bottoms flow rapid little streams, the outcome of the natural drainage of the territory.

"On a level stretch of surface in the southernmost part of the plat was erected the 'Main Exhibition Building,' and directly west of this the 'Machinery Hall.' Parallel to these structures, without the grounds, a wide, well-paved avenue had been laid out, and beneath this extended a brick sewer connecting with an intersecting main, the latter being designed to carry the sewage to a point in the river below the Schuylkill dam. The buildings had therefore a sewer situated on their south, and one of the ravines, the Lansdowne, with its flowing water, immediately to their north. Both these channels were used for drainage, pipes being laid to each, but we were told that merely rain-water from the roof was carried into the ravine, while the contents of the water-closets were discharged into the sewer.

"All of the other structures, however, which made up the 'Centen-

nial Buildings'—Agricultural Hall, Horticultural Hall, the Government Building, Women's Pavilion, the Restaurants, Guards' Barracks, the Commissioners' Houses, and smaller constructions—all these drained into the rivulets which coursed along the hollows of the ravines. In general terms this drainage consisted of kitchen slops, the liquid from urinals, the overflow from fountains, and the general surface washings; where human excreta were liable to be deposited rather shallow pits were dug, which were to be emptied of their contents from time to time, and these carried beyond the grounds. But we found instances where water-closets in some of the buildings were discharged directly into the streams, and we traced overflow pipes from the pits above mentioned (some of which remained full and exposed to the air at the time of our visit) to the same destination.

"Opposite the place where the water from the Lansdowne ravine falls into the river Schuylkill there stretches parallel to the river bank, and not far from the shore, a narrow island, converting that part of the river into a contracted canal. And just here, alongside of the debouchure of the polluted stream was placed the mouth of the water-pipe which carried the water-supply for drinking and other purposes to the grounds.

"The existence of the conditions for a certain degree of contamination of the drinking water even with fecal matter are, then, clearly demonstrated; and those persons who passed along the river-road when the glory of the Exhibition was at its height will remember the foul smell which assailed their noses when they reached the locality described. An effort had been made to abate the nuisance by cutting a ditch across the small island, but it is questionable if this resulted in a sufficient mingling of the purer water from the river beyond, or the escape of the contaminated, to materially correct the evil.

"The polluted water from the other ravine, the Belmont, was discharged in a still more unfortunate position, for it flowed out near the spot where the feeding pipe of the Belmont Reservoir is laid, exposing it to a contamination further reaching in its effects. The water from this basin was at one time distributed to the Centennial Grounds, and supplies the whole of West Philadelphia; also one of the municipal divisions on the east side of the river, the 29th Ward."

The number of deaths from fever just recorded constitutes a death-rate of 6.37 to every 10,000 of the population, an increase of 1.89 as compared with the average for the past ten years, and of 1.14 as compared with the rate for 1875; thus fully bearing out the assertion

of your Committee, which was called in question a year ago, that this disease is steadily on the increase among us. It is evident that the public conscience and possibly even the professional conscience needs quickening upon this matter. It will not do to say—the general death-rate of Philadelphia is less than that of this, that, or the other city, and therefore we need not trouble ourselves about a slight increase in one or two diseases. The individual who has no higher aspirations towards virtue and morality than to be able to say that he is no worse than his neighbors, will never illustrate a very noble type of manhood, and the city which is content with being not more unhealthy than most other cities of its size will never shine as a model of sanitary government.

Let us see what amount of comfort we are able to draw from a comparison of ourselves with New York, to whose high death-rate the optimists among us are fond of pointing as a foil to our own comparatively low rate with so much self-complacency.

The population of New York is 1,079,326, that of Philadelphia 850,900. Other things being equal, the actual number of deaths from any one disease should be 26 per cent. greater in the former city than in the latter. The fact that an increase of population entitles to a higher death-rate we disregard. But the additional fact that the immense population of New York is crowded into a space of 22 square miles, while our own is spread out over a vast area of 129 square miles, giving an average of 49,060 inhabitants to the square mile there as compared with only 6,596 here, cannot be honestly overlooked. The filthy, teeming tenement house of that city should certainly be the fever haunt rather than the comfortable, neat, well-ordered, and well-ventilated dwelling in which most Philadelphia families are housed. This fact alone would fairly entitle her to a largely increased fever death-rate. Her actual excess over us in general mortality is on the average 33 per cent. The more moderate allowance that we have supposed would increase the excess to which she would be entitled in the number of deaths, to 31 per cent. Now, what are the figures during the past year?

*The Deaths from Typhoid Fever*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| During | | | Dec. | 1876, | were in Philadelphia, | 101, | in New York, | 19 | |
| " | 3 weeks of | | Jan. | 1877, | " | " | 38, | | |
| " | 4 | " | " | " | | | | " " | 13 |
| " | | | Feb. | " | " | " | 24, | " " | 19 |
| " | | | March, | " | " | " | 24, | " " | 8 |
| " | | | April, | " | " | " | 34, | " " | 4 |
| " | | | May, | " | " | " | | | |
| " | | | June, | " | " | " | 38, | " " | 17 |
| " | | | July, | " | " | " | 47, | " " | 9 |
| " | | | Aug. | " | " | " | 56, | " " | 27 |
| " | | | Sept. | " | " | " | 59, | " " | 37 |

We find, therefore, that so far from New York presenting the excess of typhoid mortality to which her larger population and her scantier accommodation entitle her, Philadelphia leads her by never less than 33 per cent., and in one instance by 800 per cent. This is certainly not a flattering or encouraging exhibit. Can it be improved? Unquestionably it can, by remedying existing defects in our system of drainage, sewerage, and water-supply. "But this will cost money." Undoubtedly it will. Anything that is worth having costs money. But nothing costs so much money as disease, which is certainly not worth having. The four hundred and thirty-six productive lives which were thrown away in this city through this one agency represent a loss, that is to say a cost, to the city of not less than $650,000.

As looking towards intelligent and well-grounded action in the direction of an abatement of this annual drain upon the wealth of the community, to put it upon no higher footing, your Committee beg leave to introduce the following memorial, and to ask its adoption by the Society.

*To the Honorable the Select and Common Councils of the City of Philadelphia:*

The Philadelphia County Medical Society, representing the Medical Profession of this city, respectfully memorializes your honorable bodies:—

That, in the experience of its individual members, diseases which are known to be caused by imperfect sewerage and drainage are steadily on the increase in this city;

That, in the opinion of those best qualified to judge, from their knowledge of the details of the present system of sewerage, inaugurated when the city was comparatively small and divided into numerous independent municipalities, it is inadequate to the requirements of a great metropolis;

That the time cannot therefore be far distant when this system will need to be materially altered and remodelled; and

That the interests of public health and of sound economy alike demand that no such step, involving, as it must, a considerable outlay, should be taken without a careful study of the comparative merits of the methods now in use in other great cities, both abroad and at home.

In view of these important facts the Society respectfully requests your honorable bodies to consider the expediency of appointing an expert in sanitary engineering as a Special Commissioner from this city to the capitals and other large cities of Europe, duly accreditd by the municipal authorities, with instructions to acquaint himself thoroughly with all the modes of sewerage and drainage now in use, together with the advantages and disadvantages of each; with all experiments which are in process of trial, and all plans proposed for the solution of this most difficult problem, and to report the results of his investigations within a year from the date of his appointment.

Bespeaking for the subject your enlightened consideration, your memorialists will ever pray, etc.[1]

A "Committee on Hygiene and the Relations of the Medical Profession to the Public" was constituted at the stated meeting of the County Medical Society, held April 18, 1877. At that meeting the President of the Society appointed on such Committee: Dr. Benj. Lee, Chairman; Drs. Richard A. Cleemann, William Goodell, George Hamilton, Andrew Nebinger, William Pepper, Joseph G. Richardson, John B. Roberts, and Frank Woodbury.

Shortly afterwards the Committee met, and further perfected its organization by the appointment of a Secretary (Dr. Cleemann), and a Recorder (Dr. Woodbury). The next step was the arrangement of sub-committees to cover as much as possible of the wide field of labor which at once appeared before the Committee. They were divided as follows:—

1. On "Hygiene of School Children;" Chairman, Dr. Nebinger.
2. On "Sewerage and Drainage, especially with reference to Typhoid Fever;" Chairman, Dr. Cleemann.
3. On "Physical Culture of Infants, as affected by feeding, clothing, bathing, etc.;" Chairman, Dr. Goodell.
4. On "Examination of our Drinking Water;" Chairman, Dr. Richardson.

[1] This Memorial was adopted by the Society and presented to Councils duly attested by the signatures of the President and Secretary.

The reports of the second and third of these sub-committees, by their respective chairmen—two by Dr. Lee on "Personal Hygiene during the Warm Weather," and "The Removal and Disposal of Garbage," and one by Dr. Richardson on "The White Incrustations on the outer Walls of the Houses,"—have been made to the Committee, and duly submitted to the Society in general meetings. These reports became the subjects of interesting and valuable discussion, and the meetings being attended by representatives of the secular press, abstracts of what seemed suitable in our proceedings for general publication appeared in the columns of the daily newspapers. It is hoped that through these means attention was called to some of the dangers lurking about the community, and information given regarding them which has led to intelligent and successful efforts to reach a higher standard of health and well-being.

There was also a personal inspection made by the Chairman and Secretary of the Committee of the area known as the "Centennial Grounds," while it was being restored for the general purposes of the Park, with a view of ascertaining certain details of the system of drainage and sewerage of the "Exhibition Buildings," which may have had an injurious influence upon the public health. They subsequently made a report of what they saw to the Committee, which is offered now with this communication.

It remains to be stated that a sub-committee on "The Best Mode of establishing a more intimate connection between the Medical and Legal Professions," Chairman, Dr. Woodbury, has been appointed, but has not yet made a report.

BENJAMIN LEE, *Chairman.*
A. D. HALL,
R. BURNS,
H. EVANS,
H. LEAMAN,
*Committee on Meteorology and Epidemics*

## METEOROLOGICAL TABLE No. 1.

*A General Abstract of the Meteorological Observations made at Philadelphia, Pa., during the year* 1877.

By JAMES A. KIRKPATRICK, A.M.

Latitude 39° 57½′ N. Longitude 75° 11¼′ W. from Greenwich. Barometer fount 55½ feet above mean tide in the Delaware River.

| 1877. MONTHS. | Thermometer. | | | | | | | Rain or melted snow. | | Clouds. | | | | | | Relative humidity. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Means. | | | | | | Clear. | Cloudy. | Means of sky covered. | | | | | | Means. | | | |
| | Maximum. | Minimum. | Mean daily range. | 7 A. M. | 2 P. M. | 9 P. M. | Monthly. | No. of days it fell. | Amount | ½ or less covered. | More than ½ covered. | 7 A. M. | 2 P. M. | 9 P. M. | Monthly. | Maximum. | Minimum. | 7 A. M. | 2 P. M. | 9 P. M. | Monthly. |
| | ° | ° | ° | ° | ° | ° | ° | days | inches | days | days | p. c. | p. c. | p. c. | p. c. | p. c. | p. c. | p. c. | p. c. | p. c. | p. c. |
| January, | 50 | 11 | 5.46 | 27.89 | 35.08 | 32.06 | 31.68 | 10 | 3.61 | 10 | 21 | 59 | 62 | 51 | 57.4 | 95 | 31 | 74 | 55 | 71 | 66.6 |
| February, | 61 | 20 | 5.20 | 35.20 | 45.55 | 39.73 | 40.16 | 7 | 1.55 | 13 | 15 | 56 | 48 | 41 | 48.3 | 83 | 21 | 66 | 41 | 59 | 55.5 |
| March, | 69 | 19 | 7.29 | 37.53 | 45.53 | 41.82 | 41.63 | 16 | 5.74 | 7 | 24 | 63 | 69 | 69 | 67.1 | 93 | 19 | 64 | 52 | 63 | 59.6 |
| April, | 79 | 32 | 5.56 | 48.23 | 59.48 | 52.53 | 53.42 | 9 | 3.34 | 10 | 20 | 51 | 64 | 57 | 57.3 | 93 | 12 | 62 | 44 | 56 | 53.6 |
| May, | 92 | 41 | 4.38 | 59.43 | 71.14 | 62.89 | 64.49 | 10 | 1.05 | 8 | 23 | 43 | 70 | 47 | 53.4 | 86 | 11 | 61 | 35 | 57 | 51.1 |
| June, | 94 | 57 | 4.08 | 71.70 | 81.92 | 74.62 | 76.08 | 11 | 6.03 | 6 | 24 | 76 | 68 | 41 | 61.8 | 95 | 26 | 71 | 51 | 68 | 63.3 |
| July, | 97 | 64 | 3.09 | 76.42 | 85.56 | 79.56 | 80.51 | 12 | 6.35 | 7 | 24 | 56 | 69 | 49 | 58.1 | 86 | 33 | 71 | 52 | 69 | 63.9 |
| August, | 93 | 69 | 2.61 | 75.58 | 84.45 | 79.17 | 79.73 | 8 | 1.95 | 10 | 21 | 52 | 61 | 39 | 50.8 | 86 | 37 | 71 | 53 | 67 | 63.7 |
| September, | 86 | 53 | 4.10 | 66.87 | 76.00 | 70.80 | 71.22 | 7 | 3.59 | 9 | 21 | 73 | 58 | 44 | 58.4 | 94 | 31 | 74 | 55 | 69 | 65.8 |
| October, | 81 | 44 | 5.24 | 56.32 | 66.34 | 60.26 | 60.97 | 11 | 8.79 | 13 | 18 | 63 | 45 | 43 | 50.6 | 100 | 26 | 77 | 57 | 74 | 69.1 |
| November, | 69 | 26 | 6.71 | 46.82 | 54.50 | 50.50 | 50.61 | 12 | 7.13 | 13 | 17 | 55 | 53 | 51 | 53.1 | 94 | 21 | 69 | 54 | 64 | 62.4 |
| December, | 64 | 26 | 5.55 | 39.03 | 48.45 | 44.34 | 43.94 | 4 | 1.29 | 10 | 21 | 64 | 53 | 41 | 52.8 | 88 | 25 | 69 | 50 | 63 | 60.9 |
| Annual means, | max 97 | min 11 | 4.94 | 53.42 | 62.83 | 57.36 | 57.87 | total 117 | total 50.42 | sum 116 | sum 249 | 59 | 60 | 48 | 55.8 | max 100 | min 11 | 69 | 50 | 65 | 61.3 |
| Winter, | 61 | 6 | 5.66 | 29.81 | 37.31 | 33.42 | 33.51 | 28 | 7.52 | 34 | 56 | 58 | 58 | 47 | 54.2 | 95 | 19 | 69 | 49 | 66 | 61.4 |
| Spring, | 92 | 19 | 5.74 | 48.40 | 58.72 | 52.41 | 53.18 | 35 | 10.13 | 25 | 67 | 52 | 68 | 58 | 59.3 | 93 | 11 | 62 | 44 | 59 | 54.8 |
| Summer, | 97 | 57 | 3.26 | 74.56 | 83.98 | 77.78 | 78.77 | 31 | 14.33 | 23 | 69 | 61 | 66 | 43 | 56.9 | 95 | 26 | 71 | 52 | 68 | 63.6 |
| Autumn, | 86 | 26 | 5.35 | 56.67 | 65.61 | 60.52 | 60.93 | 30 | 19.51 | 35 | 56 | 64 | 52 | 46 | 54.0 | 100 | 21 | 73 | 55 | 69 | 65.8 |
| Means for 26 years, | 102 | min —9 | 5.27 | 50.33 | 59.92 | 53.83 | 54.71 | an'ual 126 | an'ual 46.88 | an'ual 110 | an'ual 255 | 60 | 61 | 46 | 55.7 | max 100 | min 7 | 73 | 55 | 70 | 66.1 |

METEOROLOGICAL TABLE No. 1—*Continued.*—*A General Abstract of the Meteorological Observations made at Philadelphia during the year* 1877.

| 1877. MONTHS. | Force of vapor. | | | | | | Winds. | | Barometer reduced to 32° Fahrenheit. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Maximum. | Minimum. | Means. | | | | Monthly Resultant. | No. of times in 1000. | Maximum. | Minimum. | Mean daily range. | Means. | | | |
| | | | 7 A. M. | 2 P. M. | 9 P. M. | Monthly. | | | | | | 7 A. M. | 2 P. M. | 9 P. M. | Monthly. |
| | inch | inch | inch | inch | inch | inch | direction from | times | inches | inches | inch | inches | inches | inches | inches |
| January, | .250 | .045 | .120 | .115 | .132 | .122 | N. 62° 14′ W. | 283 | 30.564 | 29.223 | .251 | 30.098 | 30.088 | 30.101 | 30.096 |
| February, | .282 | .049 | .139 | .127 | .150 | .139 | N. 58 7 W. | 399 | 30.473 | 29.347 | .156 | 30.027 | 30.009 | 30.019 | 30.018 |
| March, | .424 | .051 | .158 | .166 | .182 | .169 | N. 68 12 W. | 148 | 30.520 | 29.090 | .251 | 29.954 | 29.914 | 29.935 | 29.934 |
| April, | .459 | .068 | .216 | .222 | .223 | .220 | N. 1 35 W. | 248 | 30.324 | 29.354 | .138 | 29.955 | 29.897 | 29.925 | 29.926 |
| May, | .653 | .066 | .331 | .281 | .342 | .318 | N. 70 52 W. | 332 | 30.336 | 29.404 | .100 | 29.968 | 29.918 | 29.937 | 29.941 |
| June, | .883 | .235 | .555 | .552 | .592 | .566 | S. 28 56 W. | 304 | 30.234 | 29.555 | .129 | 29.971 | 29.930 | 29.932 | 29.944 |
| July, | .920 | .341 | .652 | .637 | .702 | .664 | S. 87 4 W. | 252 | 30.195 | 29.664 | .107 | 29.911 | 29.887 | 29.895 | 29.898 |
| August, | .843 | .362 | .631 | .614 | .671 | .639 | S. 88 27 W. | 254 | 30.163 | 29.655 | .074 | 29.926 | 29.887 | 29.897 | 29.903 |
| September, | .783 | .224 | .503 | .495 | .531 | .510 | S. 63 26 W. | 45 | 30.265 | 29.699 | .078 | 30.047 | 30.004 | 30.018 | 30.023 |
| October, | .686 | .144 | .363 | .371 | .392 | .375 | S. 83 29 W. | 216 | 30.444 | 29.345 | .149 | 30.021 | 29.965 | 29.993 | 29.993 |
| November, | .562 | .061 | .237 | .247 | .256 | .247 | N. 65 33 W. | 180 | 30.552 | 29.394 | .216 | 30.081 | 30.048 | 30.068 | 30.066 |
| December, | .490 | .077 | .169 | .175 | .193 | .179 | N. 75 32 W. | 215 | 30.556 | 29.307 | .216 | 30.146 | 30.101 | 30.116 | 30.121 |
| Annual means, | max .920 | min .045 | .339 | .334 | .364 | .346 | N. 77° 4′ W. | 199 | max. 30.564 | min. 29.090 | .155 | 30.009 | 29.971 | 29.986 | 29.989 |
| Winter, | .282 | .027 | .119 | .112 | .131 | .121 | N. 59° 25′ W. | 375 | 30.617 | 29.024 | .227 | 30.031 | 30.017 | 30.029 | 30.026 |
| Spring, | .653 | .051 | .235 | .223 | .249 | .236 | N. 48 56 W. | 207 | 30.520 | 29.090 | .163 | 29.959 | 29.910 | 29.932 | 29.934 |
| Summer, | .920 | .235 | .613 | .601 | .655 | .623 | S. 67 5 W. | 237 | 30.234 | 29.555 | .103 | 29.936 | 29.901 | 29.908 | 29.915 |
| Autumn, | .783 | .061 | .368 | .371 | .393 | .377 | N. 87 16 W. | 141 | 30.552 | 29.345 | .148 | 30.050 | 30.006 | 30.026 | 30.027 |
| Means for 26 years, | max. 1.059 | min. .012 | .322 | .331 | .344 | .332 | N. 77° 8′ W. | 194 | max. 30.970 | min. 28.778 | .164 | 29.930 | 29.890 | 29.913 | 29.911 |

## METEOROLOGICAL TABLE No. 2.

*Great or sudden changes of Temperature at Philadelphia, Pa.*

1877.

February 22. Thermometer rose from 37° at 7 A. M. to 61° at 2 P. M. same day. Change 24°
March 9. " fell " 60 " 7 A. M. " 34 " 9 P. M. " " " 26

The mean temperature was below 32° on

| | | | |
|---|---|---|---|
| January | 1, 2, 3, 4, 5, 6, 9, 10, 17, 21, 22, 23, 24, 25, 26 | = | 15 days. |
| February | 13 | = | 1 day. |
| March | 10, 18, 19 | = | 3 days. |
| November | 30 | = | 1 day. |
| | Total | | 20 days. |

And above 81° on

| | | | |
|---|---|---|---|
| May | 18, 19, 20 | = | 3 days. |
| June | 3, 15, 19, 26 | = | 4 " |
| July | 1, 9, 10, 16, 17, 18, 24, 25, 26, 27, 28, 29, 30 | = | 13 " |
| August | 8, 12, 27, 28, 29, 30, 31 | = | 7 " |
| | Total | | 27 days. |

## METEOROLOGICAL TABLE No. 3.

*Maxima and Minima, etc.*

The thermometer was highest, 97°, on the 27th of July.
" " " lowest, 11°, " 4th of January.

The warmest day was July 26, of which the mean temperature was 86°.
" coldest " " January 4, " " " " $15\frac{1}{3}$°.

The barometer was highest, 30.564, on the 17th of January.
The greatest mean daily pressure was 30.539 on the 21st of December.

The barometer was lowest, 29.090, on the 9th of March.
The least mean daily pressure was 29.280 on the 27th of March.

## MORTUARY TABLE.

*Deaths from all Causes Registered in the City of Philadelphia, for the year* 1877 (*Stillborn not included*).

(Abridged from the Tables of Dr. William H. Ford, Secretary of the Board of Health.)

| CAUSES OF DEATH. | Total. | Males. | Females. | Boys. | Girls. | Under 1 year. | 1 to 2 years. | 2 to 5 years. | Adults. | Minors. | People of color. | Nativity. United States. | Nativity. Foreign. | Nativity. Unknown. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ALL CAUSES | 16,004 | 8138 | 7866 | 4035 | 3722 | 3921 | 1181 | 1315 | 8247 | 7757 | 963 | 11,946 | 3307 | 751 |
| SPECIFIED CAUSES | 15,967 | 8112 | 7855 | 4023 | 3717 | 3710 | 1179 | 1313 | 8227 | 7740 | 962 | 11,921 | 3399 | 747 |
| CLASSES. | | | | | | | | | | | | | | |
| I.—Zymotic diseases | 3,710 | 1813 | 1897 | 1396 | 1484 | 1095 | 484 | 734 | 830 | 2880 | 147 | 3,288 | 357 | 65 |
| II.—Constitutional diseases | 3,861 | 1860 | 2001 | 621 | 587 | 697 | 161 | 92 | 2653 | 1208 | 299 | 2,713 | 951 | 197 |
| III.—Local diseases | 6,146 | 3255 | 2891 | 1487 | 1271 | 1430 | 484 | 441 | 3388 | 2758 | 390 | 1,451 | 1403 | 292 |
| IV.—Developmental diseases | 1,703 | 744 | 959 | 399 | 333 | 651 | 38 | 20 | 971 | 732 | 107 | 1,153 | 427 | 124 |
| V.—Violent deaths | 584 | 466 | 118 | 132 | 47 | 48 | 14 | 28 | 405 | 179 | 20 | 342 | 168 | 74 |
| ORDERS. | | | | | | | | | | | | | | |
| I.—1. Miasmatic diseases | 3,606 | 1755 | 1851 | 1373 | 1459 | 1056 | 484 | 727 | 774 | 2832 | 143 | 3,223 | 330 | 53 |
| 2. Enthetic diseases | 42 | 22 | 20 | 15 | 14 | 25 | ... | 3 | 13 | 29 | 3 | 35 | 5 | 2 |
| 3. Dietic diseases | 50 | 30 | 20 | 2 | 5 | 6 | .... | 1 | 43 | 7 | 1 | 18 | 22 | 10 |
| 4. Parasitic diseases | 12 | 6 | 6 | 6 | 6 | 8 | .... | 3 | .... | 12 | .... | 12 | .... | .... |
| II.—1. Diathetic diseases | 541 | 184 | 357 | 17 | 15 | 6 | 4 | 12 | 509 | 32 | 33 | 283 | 230 | 28 |
| 2. Tubercular diseases | 3,320 | 1676 | 1644 | 604 | 572 | 691 | 157 | 80 | 2144 | 1176 | 266 | 2,430 | 721 | 169 |
| III.—1. Diseases of nervous system | 2,277 | 1219 | 1058 | 742 | 629 | 773 | 262 | 217 | 906 | 1371 | 120 | 1,848 | 353 | 76 |
| 2. Diseases of organs of circulation | 827 | 439 | 388 | 54 | 69 | 22 | 4 | 16 | 704 | 123 | 61 | 480 | 285 | 62 |
| 3. Diseases of respiratory organs | 1,636 | 875 | 761 | 424 | 404 | 392 | 167 | 161 | 808 | 828 | 130 | 1,188 | 378 | 70 |
| 4. Diseases of digestive organs | 952 | 492 | 460 | 215 | 132 | 227 | 48 | 27 | 605 | 347 | 44 | 648 | 270 | 34 |
| 5. Diseases of urinary organs | 341 | 204 | 137 | 37 | 22 | 9 | 2 | 15 | 282 | 59 | 30 | 209 | 82 | 50 |
| 6. Diseases of generative organs | 63 | .... | 63 | .... | 2 | .... | .... | .... | 61 | 2 | 4 | 40 | 23 | ... |
| 7. Diseases of organs of locomotion | 34 | 20 | 14 | 14 | 7 | 2 | 1 | 4 | 13 | 21 | 1 | 25 | 9 | ... |
| 8. Diseases of integumentary system | 16 | 6 | 10 | 1 | 6 | 5 | .... | 1 | 9 | 7 | .... | 13 | 3 | ... |
| IV.—1. Developmental diseases of children | 151 | 77 | 74 | 76 | 74 | 134 | 12 | 2 | 1 | 150 | 4 | 151 | .... | ... |
| 2. Developmental diseases of adults | 42 | .... | 42 | .... | 3 | .... | .... | .... | 39 | 3 | .... | 29 | 11 | 2 |
| 3. Developmental diseases of old people | 619 | 197 | 422 | .... | .... | .... | .... | .... | 619 | .... | 85 | 285 | 295 | 39 |
| 4. Diseases of nutrition | 891 | 470 | 421 | 323 | 256 | 517 | 26 | 18 | 312 | 579 | 68 | 688 | 121 | 82 |
| V.—1. Accident or negligence[1] | 471 | 379 | 92 | 119 | 42 | 37 | 12 | 26 | 310 | 161 | 17 | 283 | 127 | 61 |
| 2 Battle | 4 | 4 | .... | .... | .... | .... | .... | .... | 4 | .... | .... | 4 | .... | ... |
| 3. Homicide | 11 | 6 | 5 | .... | .... | .... | .... | .... | 11 | .... | 2 | 4 | 6 | 1 |
| 4 Suicide | 59 | 49 | 10 | 1 | .... | .... | .... | .... | 58 | 1 | .... | 25 | 26 | 8 |
| 5 Execution | 2 | 2 | .... | .... | .... | .... | .... | .... | 2 | .... | .... | 1 | 1 | ... |
| 6. Violent deaths (not classed) | 37 | 26 | 11 | 12 | 5 | 11 | 2 | 2 | 20 | 17 | 1 | 25 | 8 | 4 |
| CLASS I.—Zymotic diseases | 3,710 | 1813 | 1897 | 1396 | 1484 | 1095 | 484 | 734 | 830 | 2880 | 147 | 3,288 | 357 | 65 |
| I.—ORDER 1. Miasmatic diseases | 3,606 | 1755 | 1851 | 1373 | 1459 | 1056 | 484 | 727 | 774 | 2832 | 143 | 3,223 | 330 | 53 |
| Small-pox | 158 | 74 | 84 | 43 | 65 | 19 | 11 | 39 | 50 | 108 | 7 | 133 | 23 | ... |
| Measles | 69 | 33 | 36 | 32 | 35 | 17 | 24 | 25 | 2 | 67 | .... | 67 | 1 | 1 |
| Scarlet fever | 379 | 184 | 195 | 183 | 194 | 24 | 59 | 185 | 2 | 377 | 3 | 374 | 3 | 2 |

[1] For want of definite information, some causes of death are placed under this order that properly belong under Order No. 4.

## MORTUARY TABLE—*Continued.*

| CAUSES OF DEATH. | Total. | Males. | Females. | Boys. | Girls. | Under 1 year. | 1 to 2 years. | 2 to 5 years. | Adults. | Minors. | People of color. | Nativity. United States. | Nativity. Foreign. | Nativity. Unknown. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CLASS I. ORDER 1.—*Continued.* | | | | | | | | | | | | | | |
| Diphtheria | 458 | 188 | 270 | 182 | 263 | 39 | 69 | 209 | 13 | 445 | 15 | 446 | 11 | 1 |
| Quinsy | 6 | 1 | 5 | 1 | 5 | 3 | 2 | .... | .... | 6 | .... | 6 | .... | .... |
| Croup | 338 | 172 | 166 | 171 | 164 | 35 | 69 | 180 | 3 | 335 | 3 | 337 | 1 | .... |
| Hooping-cough | 81 | 32 | 49 | 31 | 49 | 45 | 22 | 12 | 1 | 80 | 2 | 81 | .... | .... |
| Typhoid fever | 554 | 282 | 272 | 99 | 106 | 1 | 5 | 23 | 348 | 206 | 22 | 394 | 145 | 15 |
| Typhus fever | 15 | 8 | 7 | 3 | .... | .... | .... | 2 | 12 | 3 | 1 | 11 | 4 | .... |
| Erysipelas | 77 | 34 | 43 | 9 | 27 | 26 | 3 | .... | 41 | 36 | 1 | 59 | 14 | 4 |
| Puerperal fever | 48 | .... | 40 | .... | 9 | .... | .... | .... | 39 | 9 | 5 | 29 | 9 | 10 |
| Carbuncle | 4 | 3 | 1 | .... | .... | .... | .... | .... | 4 | .... | .... | 4 | .... | .... |
| Influenza | 1 | 1 | .... | 1 | .... | .... | 1 | .... | .... | 1 | .... | 1 | .... | .... |
| Dysentery | 79 | 42 | 37 | 16 | 7 | 9 | 7 | 4 | 56 | 23 | 2 | 45 | 27 | 7 |
| Diarrhœa | 123 | 64 | 59 | 32 | 28 | 51 | 6 | 3 | 63 | 60 | 10 | 87 | 29 | 7 |
| Cholera morbus | 46 | 23 | 20 | 6 | 1 | 3 | .... | 2 | 36 | 7 | 1 | 19 | 24 | .... |
| Cholera infantum | 979 | 516 | 463 | 516 | 463 | 764 | 190 | 24 | .... | 979 | 60 | 978 | 1 | .... |
| Intermittent fever | 7 | 5 | 2 | 2 | .... | 1 | 1 | .... | 5 | 2 | .... | 6 | .... | 1 |
| Remittent fever | 28 | 16 | 12 | 5 | 3 | 1 | 2 | 1 | 20 | 8 | 1 | 20 | 8 | .... |
| Rheumatism | 37 | 15 | 22 | 3 | 7 | .... | .... | 1 | 27 | 10 | 4 | 25 | 9 | 3 |
| Cerebro-spinal meningitis | 56 | 33 | 23 | 28 | 21 | 15 | 12 | 11 | 7 | 49 | .... | 53 | 3 | .... |
| Pyæmia | 44 | 23 | 21 | 9 | 8 | 3 | 1 | 8 | 27 | 17 | 3 | 30 | 14 | .... |
| Septicæmia | 19 | 5 | 14 | 1 | 3 | .... | .... | .... | 15 | 4 | 3 | 13 | 4 | 2 |
| Other zymotic diseases | 3 | 1 | 2 | .... | .... | .... | .... | .... | 3 | .... | .... | 3 | .... | .... |
| I.—ORDER 2. Enthetic diseases | 42 | 22 | 20 | 15 | 14 | 25 | .... | 3 | 13 | 29 | 3 | 35 | 5 | 2 |
| Syphilis | 38 | 18 | 20 | 13 | 14 | 25 | .... | 2 | 11 | 27 | 3 | 33 | 3 | 2 |
| Hydrophobia | 4 | 4 | .... | 2 | .... | .... | .... | 1 | 2 | 2 | .... | 2 | 2 | .... |
| I.—ORDER 3. Dietic diseases | 50 | 30 | 20 | 2 | 5 | 6 | .... | 1 | 43 | 7 | 1 | 18 | 22 | 10 |
| Purpura and scurvy | 16 | 6 | 10 | 2 | 5 | 6 | .... | 1 | 9 | 7 | .... | 10 | 5 | 1 |
| Alcoholism | 34 | 24 | 10 | .... | .... | .... | .... | .... | 34 | .... | 1 | 8 | 17 | 9 |
| I.—ORDER 4. Parasitic diseases | 12 | 6 | 6 | 6 | 6 | 8 | .... | 3 | .... | 12 | .... | 12 | .... | .... |
| Thrush | 11 | 5 | 6 | 5 | 6 | 8 | .... | 3 | .... | 11 | .... | 11 | .... | .... |
| Worms | 1 | 1 | .... | 1 | .... | .... | .... | .... | .... | 1 | .... | 1 | .... | .... |
| CLASS II.—Constitutional diseases | 3,861 | 1860 | 2001 | 621 | 587 | 697 | 161 | 92 | 2653 | 1208 | 299 | 2713 | 951 | 197 |
| II.—ORDER 1. Diathetic diseases | 541 | 184 | 357 | 17 | 15 | 6 | 4 | 12 | 509 | 32 | 33 | 283 | 230 | 28 |
| Gout | 9 | 3 | 6 | .... | .... | .... | .... | .... | 9 | .... | .... | 6 | 3 | .... |
| Dropsy | 144 | 58 | 86 | 13 | 6 | 4 | 3 | 5 | 125 | 19 | 14 | 102 | 30 | 3 |
| Anæmia | 23 | 9 | 14 | 2 | 2 | 1 | .... | 2 | 19 | 4 | 3 | 15 | 7 | 1 |
| Cancer | 331 | 100 | 231 | 1 | 2 | .... | .... | 2 | 328 | 3 | 15 | 142 | 170 | 19 |
| Cancrum oris (noma) | 1 | .... | 1 | .... | 1 | 1 | .... | .... | .... | 1 | .... | 1 | .... | .... |
| Gangrene | 29 | 13 | 16 | 1 | 3 | .... | .... | 3 | 25 | 4 | 1 | 15 | 9 | 5 |
| Leucocythæmia | 4 | 1 | 3 | .... | 1 | .... | 1 | .... | 3 | 1 | .... | 2 | 2 | .... |
| II.—ORDER 2. Tubercular diseases | 3,320 | 1676 | 1644 | 604 | 572 | 691 | 157 | 80 | 2144 | 1176 | 266 | 2480 | 721 | 169 |
| Scrofula | 45 | 30 | 15 | 14 | 8 | 8 | 4 | 4 | 23 | 22 | 9 | 29 | 9 | 7 |
| Tabes mesenterica | 786 | 421 | 365 | 403 | 337 | 503 | 105 | 36 | 46 | 740 | 68 | 756 | 21 | 9 |
| Phthisis pulmonalis | 2,349 | 1142 | 1207 | 108 | 171 | 13 | 16 | 21 | 2070 | 279 | 183 | 1508 | 689 | 152 |
| Hydrocephalus | 140 | 83 | 57 | 79 | 56 | 77 | 32 | 19 | 5 | 135 | 6 | 137 | 2 | 1 |
| CLASS III.—Local diseases | 6,146 | 3255 | 2891 | 1487 | 1271 | 1430 | 484 | 441 | 3388 | 2758 | 390 | 4451 | 1403 | 292 |
| III.—ORDER 1. Nervous diseases | 2,277 | 1219 | 1058 | 742 | 629 | 773 | 262 | 217 | 906 | 1371 | 120 | 1848 | 353 | 76 |
| Cephalitis | 414 | 237 | 177 | 197 | 155 | 131 | 93 | 80 | 62 | 352 | 17 | 385 | 23 | 6 |
| Myelitis | 18 | 9 | 9 | 6 | 4 | 2 | 4 | 3 | 8 | 10 | 1 | 15 | 3 | .... |
| Apoplexy | 199 | 96 | 103 | 1 | 1 | 1 | .... | 1 | 197 | 2 | 9 | 96 | 88 | 15 |
| Paralysis | 309 | 137 | 172 | 11 | 5 | 3 | 3 | 2 | 293 | 16 | 14 | 185 | 105 | 19 |
| Insanity | 5 | 2 | 3 | .... | .... | .... | .... | .... | 5 | .... | .... | 4 | 1 | .... |
| Epilepsy | 37 | 20 | 17 | 5 | 4 | 3 | .... | 1 | 28 | 9 | 2 | 21 | 9 | 7 |
| Convulsions | 703 | 379 | 324 | 364 | 300 | 459 | 108 | 82 | 33 | 670 | 51 | 687 | 14 | 2 |
| Tetanus | 43 | 33 | 10 | 22 | 8 | 17 | 1 | 1 | 13 | 30 | 3 | 35 | 6 | 2 |
| Congestion of brain | 295 | 141 | 154 | 89 | 113 | 117 | 43 | 28 | 93 | 202 | 7 | 254 | 38 | 3 |
| Locomotor ataxy | 5 | 5 | .... | .... | .... | .... | .... | .... | 5 | .... | .... | 3 | 1 | 1 |
| Shock | 3 | 3 | .... | 2 | .... | .... | .... | 1 | 1 | 2 | .... | 2 | 1 | .... |
| Sunstroke | 8 | 6 | 2 | 2 | 2 | 1 | .... | 1 | 4 | 4 | 3 | 6 | 1 | 1 |
| Diseases of brain, etc. | 238 | 151 | 87 | 43 | 31 | 39 | 10 | 17 | 164 | 74 | 13 | 155 | 63 | 20 |

MORTUARY TABLE—*Continued.*

| CAUSES OF DEATH. | Total. | Males. | Females. | Boys. | Girls. | Under 1 year. | 1 to 2 years. | 2 to 5 years. | Adults. | Minors. | People of color. | Nativity. United States. | Nativity. Foreign. | Nativity. Unknown. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| III.—Order 2. Diseases of organs of circulation | 827 | 439 | 388 | 54 | 69 | 22 | 4 | 16 | 704 | 123 | 61 | 480 | 285 | 62 |
| Pericarditis | 91 | 46 | 45 | 14 | 18 | 2 | .... | 8 | 59 | 32 | 3 | 51 | 38 | 2 |
| Aneurism | 28 | 19 | 9 | .... | .... | .... | .... | .... | 28 | .... | 3 | 18 | 9 | 1 |
| Angina pectoris | 22 | 10 | 12 | .... | 1 | .... | .... | .... | 21 | 1 | 2 | 16 | 5 | 1 |
| Hypertrophy of heart | 73 | 38 | 35 | 4 | 9 | 2 | .... | 1 | 60 | 13 | 5 | 46 | 21 | 6 |
| Embolism | 5 | 1 | 4 | 1 | 2 | 1 | .... | 1 | 2 | 3 | .... | 4 | .... | 1 |
| Diseases of heart, etc | 608 | 325 | 283 | 35 | 39 | 17 | 4 | 6 | 534 | 74 | 45 | 345 | 212 | 51 |
| III.—Order 3. Diseases of respiratory organs | 1,636 | 875 | 761 | 424 | 404 | 392 | 167 | 161 | 808 | 828 | 130 | 1188 | 378 | 70 |
| Laryngitis | 64 | 27 | 37 | 18 | 26 | 6 | 9 | 22 | 20 | 44 | 3 | 52 | 10 | 2 |
| Bronchitis | 309 | 164 | 145 | 129 | 112 | 156 | 46 | 31 | 68 | 241 | 30 | 277 | 28 | 4 |
| Pleurisy | 93 | 52 | 41 | 6 | 13 | .... | 1 | 3 | 74 | 19 | 5 | 43 | 42 | 8 |
| Pneumonia | 840 | 455 | 385 | 201 | 186 | 148 | 83 | 80 | 453 | 387 | 61 | 575 | 217 | 48 |
| Asthma | 26 | 9 | 17 | 2 | .... | 1 | .... | 1 | 24 | 2 | 3 | 9 | 16 | 1 |
| Diseases of lung, etc | 304 | 168 | 136 | 68 | 67 | 81 | 28 | 15 | 169 | 135 | 28 | 232 | 65 | 7 |
| III.—Order 4. Diseases of digestive organs | 952 | 492 | 460 | 215 | 132 | 227 | 48 | 27 | 605 | 347 | 44 | 648 | 270 | 34 |
| Pharyngitis | 15 | 6 | 9 | 4 | 8 | 3 | 2 | 5 | 3 | 12 | 1 | 14 | 1 | ... |
| Gastritis | 10 | 6 | 4 | 2 | 1 | 1 | .... | .... | 7 | 3 | .... | 7 | 3 | ... |
| Enteritis | 357 | 199 | 158 | 131 | 79 | 139 | 42 | 12 | 147 | 210 | 19 | 283 | 69 | 5 |
| Peritonitis | 143 | 43 | 100 | 16 | 10 | 9 | .... | 1 | 120 | 23 | 14 | 84 | 46 | 13 |
| Ascites | 44 | 25 | 19 | 3 | 1 | .... | .... | 2 | 40 | 4 | 1 | 31 | 13 | ... |
| Ulceration of intestines | 10 | 5 | 5 | 1 | 1 | 1 | 1 | .... | 8 | 2 | 1 | 5 | 4 | 1 |
| Hernia | 22 | 8 | 14 | 2 | .... | 1 | 1 | .... | 20 | 2 | .... | 9 | 11 | 2 |
| Ileus | 48 | 21 | 27 | 17 | 13 | 27 | .... | 2 | 18 | 30 | 3 | 39 | 9 | ... |
| Intussusception | 11 | 5 | 6 | 2 | 2 | 2 | .... | 1 | 7 | 4 | 1 | 10 | 1 | ... |
| Stricture of intestines | 2 | 2 | .... | .... | .... | .... | .... | .... | 2 | .... | .... | 2 | .... | ... |
| Fistula | 1 | 1 | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 1 | .... | ... |
| Diseases of stomach, etc | 18 | 10 | 8 | 3 | 3 | 3 | .... | 1 | 12 | 6 | .... | 14 | 4 | ... |
| Diseases of intestines, etc | 36 | 20 | 16 | 6 | 4 | 7 | 1 | .... | 26 | 10 | .... | 23 | 12 | 1 |
| Hepatitis | 61 | 37 | 24 | 13 | 3 | 12 | .... | 1 | 45 | 16 | 1 | 39 | 21 | 1 |
| Jaundice | 27 | 16 | 11 | 14 | 5 | 17 | 1 | 1 | 8 | 19 | .... | 22 | 4 | 1 |
| Diseases of liver, etc | 146 | 88 | 58 | 4 | 2 | 5 | .... | 1 | 140 | 6 | 3 | 65 | 71 | 10 |
| Diseases of spleen, etc | 1 | .... | 1 | .... | .... | .... | .... | .... | 1 | .... | .... | .... | 1 | ... |
| III.—Order 5. Diseases of urinary organs | 341 | 204 | 137 | 37 | 22 | 9 | 2 | 15 | 282 | 59 | 30 | 209 | 82 | 50 |
| Nephritis | 29 | 19 | 10 | 9 | 5 | 2 | .... | 4 | 15 | 14 | 2 | 19 | 5 | 5 |
| Ischuria | 2 | 2 | .... | 1 | .... | 1 | .... | .... | 1 | 1 | .... | 1 | 1 | ... |
| Bright's disease (nephria) | 199 | 106 | 93 | 16 | 7 | .... | 1 | 3 | 176 | 23 | 19 | 118 | 47 | 34 |
| Diabetes | 17 | 10 | 7 | .... | 2 | .... | .... | .... | 15 | 2 | | 14 | 3 | ... |
| Calculus | 1 | 1 | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 1 | .... | ... |
| Cystitis | 15 | 15 | .... | 1 | .... | .... | .... | 1 | 14 | 1 | .... | 8 | 5 | 2 |
| Diseases of kidney, etc | 78 | 51 | 27 | 10 | 8 | 6 | 1 | 7 | 60 | 18 | 6 | 48 | 21 | 9 |
| III.—Order 6. Diseases of organs of generation | 63 | .... | 63 | .... | 2 | .... | .... | .... | 61 | 2 | 4 | 40 | 23 | ... |
| Ovarian dropsy | 14 | .... | 14 | .... | .... | .... | .... | .... | 14 | .... | 1 | 8 | 6 | ... |
| Diseases of uterus, etc | 49 | .... | 49 | .... | 2 | .... | .... | .... | 47 | 2 | 3 | 32 | 17 | ... |
| III.—Order 7. Diseases of organs of locomotion | 34 | 20 | 14 | 14 | 7 | 2 | 1 | 4 | 13 | 21 | .... | 25 | 9 | ... |
| Synovitis (arthritis) | 1 | .... | 1 | .... | .... | .... | .... | .... | 1 | .... | .... | .... | 1 | ... |
| Diseases of joints, etc | 33 | 20 | 13 | 14 | 7 | 2 | 1 | 4 | 12 | 21 | 1 | 25 | 8 | ... |
| III.—Order 8. Diseases of integumentary system | 16 | 6 | 10 | 1 | 6 | 5 | .... | 1 | 9 | 7 | .... | 13 | 3 | ... |
| Phlegmon | 10 | 5 | 5 | 1 | 5 | 4 | .... | 1 | 4 | 6 | .... | 9 | 1 | ... |
| Ulcer | 3 | .... | 3 | .... | .... | .... | .... | .... | 3 | .... | .... | 2 | 1 | ... |
| Diseases of skin, etc | 3 | 1 | 2 | .... | 1 | 1 | .... | .... | 2 | 1 | .... | 2 | 1 | ... |
| Class IV. — Developmental diseases | 1,703 | 744 | 959 | 399 | 333 | 651 | 38 | 20 | 971 | 732 | 107 | 1153 | 427 | 123 |
| IV.—Order 1. Developmental diseases of children | 151 | 77 | 74 | 76 | 74 | 134 | 12 | 2 | 1 | 150 | 4 | 151 | .... | ... |
| Cyanosis | 89 | 48 | 41 | 47 | 41 | 85 | 2 | .... | 1 | 88 | | 89 | .... | ... |
| Spina bifida | 9 | 2 | 7 | 2 | 7 | 8 | .... | .... | .... | 9 | .... | 9 | .... | ... |

MORTUARY TABLE—*Continued.*

| CAUSES OF DEATH. | Total. | Males. | Females. | Boys. | Girls. | Under 1 year. | 1 to 2 years. | 2 to 5 years. | Adults. | Minors. | People of color. | Nativity. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | United States. | Foreign. | Unknown. |
| CLASS IV. ORDER 1.—*Continued.* | | | | | | | | | | | | | | |
| Other malformations | 23 | 14 | 9 | 14 | 9 | 21 | .... | 2 | .... | 23 | .... | 23 | .... | .... |
| Teething | 30 | 13 | 17 | 13 | 17 | 20 | 10 | .... | .... | 30 | 2 | 30 | .... | .... |
| IV.—ORDER 2. Developmental diseases of adults | 42 | .... | 42 | .... | 3 | .... | .... | .... | 39 | 3 | .... | 29 | 11 | |
| Childbirth | 42 | .... | 42 | .... | 3 | .... | .... | .... | 39 | 3 | .... | 29 | 11 | |
| IV.—ORDER 3. Developmental diseases of old people | 619 | 197 | 422 | .... | .... | .... | .... | .... | 619 | .... | 35 | 285 | 295 | 39 |
| Old age | 619 | 197 | 422 | .... | .... | .... | .... | .... | 619 | .... | 35 | 285 | 295 | 39 |
| IV.—ORDER 4. Diseases of nutrition | 891 | 470 | 421 | 323 | 256 | 517 | 26 | 18 | 312 | 579 | 68 | 688 | 121 | 82 |
| Atrophy and debility | 891 | 470 | 421 | 323 | 256 | 517 | 26 | 18 | 312 | 579 | 68 | 688 | 121 | 82 |
| CLASS V.—Violent deaths | 584 | 466 | 118 | 132 | 47 | 48 | 14 | 28 | 405 | 179 | 20 | 342 | 168 | 74 |
| V.—ORDER 1. Accident or negligence | 471 | 379 | 92 | 119 | 42 | 37 | 12 | 26 | 310 | 161 | 17 | 283 | 127 | 61 |
| Fractures and contusions | 24 | 18 | 6 | 2 | 1 | .... | .... | .... | 21 | 3 | .... | 8 | 14 | 2 |
| Wounds | 15 | 14 | 1 | 6 | 1 | .... | .... | .... | 8 | 7 | 2 | 11 | 4 | .... |
| Burns and scalds | 59 | 25 | 34 | 19 | 14 | 3 | 6 | 13 | 26 | 33 | 2 | 47 | 11 | 1 |
| Poison | 17 | 14 | 3 | 2 | 1 | 1 | 1 | .. | 14 | 3 | .... | 7 | 7 | 3 |
| Drowning | 127 | 118 | 9 | 40 | 4 | 4 | .... | 2 | 84 | 44 | 5 | 60 | 27 | 40 |
| Suffocation | 229 | 190 | 39 | 50 | 21 | 29 | 5 | 11 | 158 | 71 | 8 | 150 | 64 | 15 |
| V.—ORDER 2. Battle | 4 | 4 | .... | .... | .... | .... | .... | .... | 4 | .... | .... | 4 | .... | .... |
| Killed in military service (not at Pittsburg) | 4 | 4 | .... | .... | .... | .... | .... | .... | 4 | .... | .... | 4 | .... | .... |
| V.—ORDER 3. Homicide | 11 | 6 | 5 | .... | .... | .... | .... | .... | 11 | .... | .... | 4 | 6 | 1 |
| Murder | 11 | 6 | 5 | .... | .... | .... | .... | .... | 11 | .... | 2 | 4 | 6 | 1 |
| V.—ORDER 4. Suicide | 59 | 49 | 10 | 1 | .. | .... | .... | .... | 58 | 1 | .... | 25 | 26 | 8 |
| Wounds | 24 | 21 | 3 | 1 | .... | .... | .... | .... | 23 | 1 | .... | 14 | 9 | 1 |
| Poison | 15 | 11 | 4 | .... | .... | .... | .... | .... | 15 | .... | .... | 7 | 6 | 2 |
| Drowning | 4 | 4 | .... | .... | .... | .... | .... | .... | 4 | .... | .... | 1 | 2 | 1 |
| Hanging | 14 | 11 | 3 | .... | .... | .... | .... | .... | 14 | .... | .... | 2 | 8 | 4 |
| Otherwise | 2 | 2 | .... | .... | .... | .... | .... | .... | 2 | .... | .... | 1 | 1 | .... |
| V.—ORDER 5. Execution | 2 | 2 | .... | .... | .... | .... | .... | .... | 2 | .... | .... | 1 | 1 | .... |
| Hanging | 2 | 2 | .... | .... | .... | .... | .... | .... | 2 | .... | .... | 1 | 1 | .... |
| V.—ORDER 6. Violent deaths (not classed) | 8 | 4 | .. 2 | 3 | 1 | 2 | 2 | .... | 2 | 4 | .... | 8 | .... | .... |
| Causes not specified or ill-defined | 31 | 22 | 9 | 9 | 4 | 9 | .... | 2 | 18 | 13 | 1 | 19 | 8 | 4 |